

REMARKS

By the present amendment in the accompanying RCE, the previous pending claims have been canceled without prejudice or disclaimer of the subject matter thereof and new claims 29 - 35 have been presented and more particularly reciting features of the liquid crystal display device as illustrated in Fig. 3 of the drawings of this application, for example, which features have not been previously set forth in the claims, such that the RCE has been filed in order to obtain proper consideration.

More particularly, as recited in new independent claim 29, and as illustrated in Fig. 3 of the drawings, for example, in accordance with the description in the specification, the liquid crystal display device includes a first glass substrate 8 having a thin film transistor and a pixel electrode and a second glass substrate 21 having a color filter, with a liquid crystal layer 19 being disposed therebetween, wherein the thin film transistor includes a silicon film, gate electrode and a source electrode, which is electrically connected to the pixel electrode, and wherein the pixel electrode includes a reflective electrode 3 forming a reflective region, as represented by the region RA in Fig. 3, and a light-transmissive electrode 7 forming a transmissive region, as represented by the region TA in Fig. 3, and a thickness of the liquid crystal layer of the transmissive region TA, as represented generally by L2 in Fig. 3, is greater than a thickness of the liquid crystal layer 19 of the reflective region RA, as generally represented by the L1 in Fig. 3.

Additionally, independent claim 29 recites structural features of the silicon film, the silicon oxide film, and the silicon nitride film, including differences in thicknesses, and features of a gate insulation film and an interlayer film, wherein the film thickness of the silicon nitride film falls within a range of 126 nm to 165 nm, and the silicon nitride film and the silicon oxide film are configured so as to reduce

reflection light from the transmissive region of the liquid crystal display device, with such features cooperating to improve contrast, and to prevent reflection of an external light at the transmissive region, so that when the liquid crystal display device provides for black display, with the construction as recited, the reflection of external light at the transmissive region is prevented, and contrast is improved. Such features are described at pages 19 - 20 of the specification of this application in conjunction with Figs. 5 - 7, for example. On the other hand, as described at page 21, line 3 to page 23, line 11 of the specification and in particular, in the paragraph bridging pages 21 and 22 of the specification, when there is a difference between the L2 of the transmissive region and the L1 of the reflective region, even taking into consideration when the black display is provided, "the retardation caused by the liquid crystal material differs between the transmissive region and the reflective region, and, hence, the reflective light from the transmissive region cannot be blocked". (emphasis added). However, in accordance with the structural arrangement as claimed, by providing an arrangement of a silicon oxide film and a silicon nitride film, and by providing a film thickness of the silicon nitride film within a range of 126 nm to 165 nm, as recited in claim 29, as indicated at page 22, lines 11 - 15 of the specification, "it is possible to suppress the reflection of the external light in the transmissive region, and, hence, it is possible to enhance the contrast particularly in a liquid crystal display device in which there is a difference between the gap L2 of the transmissive region and the gap L1 of the reflective region". (emphasis added). Applicants submit that such features as recited in independent claim 29 and the dependent claims are not disclosed or taught in the cited art as will become clear from the following discussion.

The rejection of claims 1, 4 - 8, 11 - 13, 15 - 17, 21 - 22 and 27 - 28 under 35 USC 103(a) as being unpatentable over Morosawa et al (JP 06-132306) in view of Baek (US 6,657,689), is considered to be obviated by the cancellation of the aforementioned claims, and is traversed insofar as it is applicable to the present claims.

As to the requirements to support a rejection under 35 USC 103, reference is made to the decision of In re Fine, 5 USPQ 2d 1596 (Fed. Cir. 1988), wherein the court pointed out that the PTO has the burden under '103 to establish a prima facie case of obviousness and can satisfy this burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references. As noted by the court, whether a particular combination might be "obvious to try" is not a legitimate test of patentability and obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching or suggestion supporting the combination. As further noted by the court, one cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention.

Furthermore, such requirements have been clarified in the decision of In re Lee, 61 USPQ 2d 1430 (Fed. Cir. 2002) wherein the court in reversing an obviousness rejection indicated that deficiencies of the cited references cannot be remedied with conclusions about what is "basic knowledge" or "common knowledge".

The court pointed out:

The Examiner's conclusory statements that "the demonstration mode is just a programmable feature which can be used in many different device[s] for providing automatic introduction by adding the proper

programming software" and that "another motivation would be that the automatic demonstration mode is user friendly and it functions as a tutorial" do not adequately address the issue of motivation to combine. This factual question of motivation is immaterial to patentability, and could not be resolved on subjected belief and unknown authority. It is improper, in determining whether a person of ordinary skill would have been led to this combination of references, simply to "[use] that which the inventor taught against its teacher."... Thus, the Board must not only assure that the requisite findings are made, based on evidence of record, but must also explain the reasoning by which the findings are deemed to support the agency's conclusion. (emphasis added)

With regard to the combination of Morosawa and Baek, applicants submit that the Examiner has engaged in a hindsight reconstruction attempt, utilizing the principle of "obvious to try", which is not the standard of 35 USC 103, and further utilizing what applicant has taught against the teacher.

Referring to Morosawa et al, irrespective of whether or not Morosawa et al discloses a silicon oxide film and a silicon nitride film formed on a surface of the substrate which may fall within a thickness range, as recited in claim 29, it is readily apparent that Morosawa et al does not disclose a liquid crystal display device, but rather, is directed to a method of manufacturing a semiconductor device so as to enable the permeation of impurities from a glass substrate to be satisfactorily avoided, while an excellent quality polysilicon thin film is formed. Thus, there is no disclosure or teaching in Morosawa et al that "the silicon nitride film and the silicon oxide film are configured so as to reduce reflection light from the transmissive region of the liquid crystal display device", (emphasis added), as recited in claim 29 and the dependent claims, nor any suggestion for utilizing such structure, as recited in claim 29, in a liquid crystal display device. Accordingly, applicants submit that all claims patentably distinguish over Morosawa et al in the sense of 35 USC 103 and should be considered allowable thereover.

As to Baek, while Baek discloses a transfective liquid crystal display device that has a high contrast ratio and wherein a complete dark state and high contrast ratio are achieved, and in which the liquid crystal layer has different thicknesses in a transmissive region and a reflective region, Baek apparent describes controlling the thickness of the liquid crystal layer to compensate for optical retardation. However, as pointed out in the paragraph bridging pages 21 and 22 of the specification of this application, when there is a difference corresponding to different thickness of the liquid crystal layer in the transmissive region and the reflective region, “the retardation caused by the liquid crystal material differs between the transmissive region and the reflective region, and hence, the reflective light from the transmissive region cannot be blocked.” Thus, the specification of this application describes deficiencies inherent in Baek. Accordingly, the present invention provides for blocking of this reflective light from the transmissive region by the configuration of the silicon nitride and the silicon oxide film, wherein the film thickness of the silicon nitride film falls within a range of 126 nm to 165 nm. Applicants note that Baek provides no disclosure or teaching of the problem and the solution, as set forth in this application, noting that the Examiner’s contention, that it would be obvious to combine Morosawa et al and Baek, represents a hindsight reconstruction attempt since Morosawa et al was published in 1994, and the priority date of Baek is 2000, some six years later. Thus, Baek had the disclosure of Morosawa et al available to it and did not consider utilizing the same in the disclosed invention of Baek. Thus, applicants submit that claim 29 and the dependent claims patentably distinguish over this proposed combination of references in the sense of 35 USC 103 and should be considered allowable thereover.

As noted above, Morosawa et al is not directed to a liquid crystal display device nor the problem of reflection of external light at the transmissive region. Thus, the Examiner's suggestion for combining Morosawa et al and Baek is not based upon any disclosure or teaching in either reference, but only comes about by the teachings of this application. Accordingly, applicants submit that claim 29 and the dependent claims patentably distinguish over the cited art and should now be in condition for allowance.

With regard to the newly added dependent claims 30 - 35 applicants note that such claims recite further features of the present invention which features are not disclosed or taught in the cited art. In particular, it is noted that claim 35 more particularly sets forth the feature of a black display with improved contrast, wherein the configuration of the silicon nitride film and the silicon oxide film substantially prevents reflection of external light at the transmissive region. Thus, applicants submit that all claims patentably distinguish over the cited art and should now be in condition for allowance.

In view of the submission of the RCE and the amendment, applicants submit that all claims should now be in condition for allowance and issuance of an action of a favorable nature is courteously solicited.

To the extent necessary, applicants petition for an extension of time under 37 CFR 1.136. Please charge any shortage in the fees due in connection with the filing of this paper, including extension of time fees, to the deposit account of Antonelli,

Terry, Stout & Kraus, LLP, Deposit Account No. 01-2135 (Case: 501.42964X00),
and please credit any excess fees to such deposit account.

Respectfully submitted,

ANTONELLI, TERRY, STOUT & KRAUS, LLP

A handwritten signature in cursive script, appearing to read 'Melvin Kraus', is written over a horizontal line.

Melvin Kraus
Registration No. 22,466

MK/jla
(703) 312-6600